

July 23, 1940.

F. L. JUNGBAUER

2,208,561

CHAIR

Filed June 13, 1938

3 Sheets-Sheet 1

Fig. 1

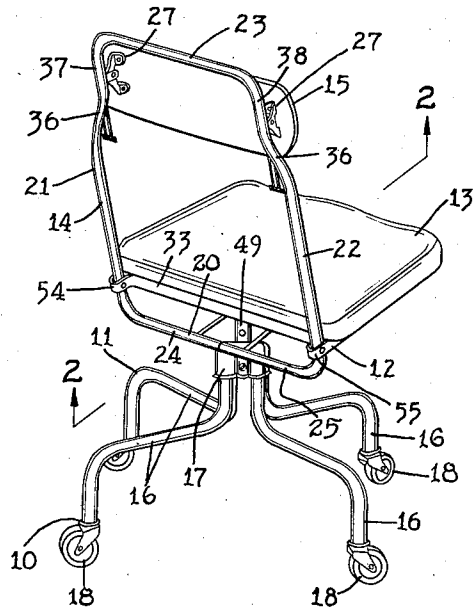
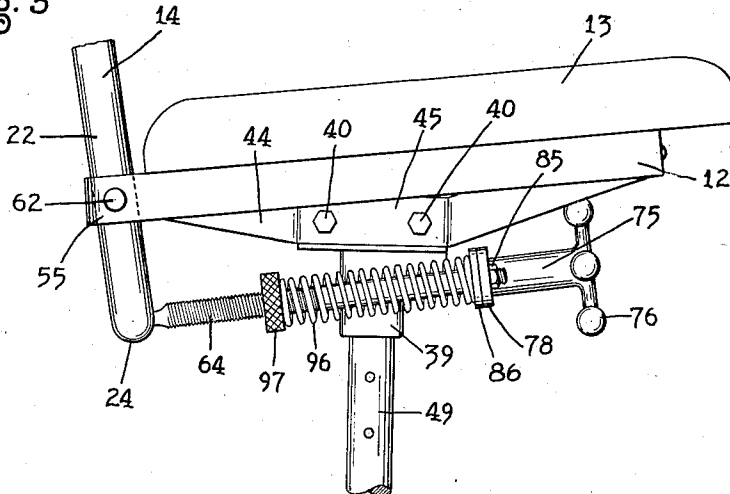


Fig. 3



Inventor

Frank L. Jungbauer

Caswell & Lagaard
Attorneys

July 23, 1940.

F. L. JUNGBAUER

2,208,561

CHAIR

Filed June 13, 1938

3 Sheets-Sheet 2

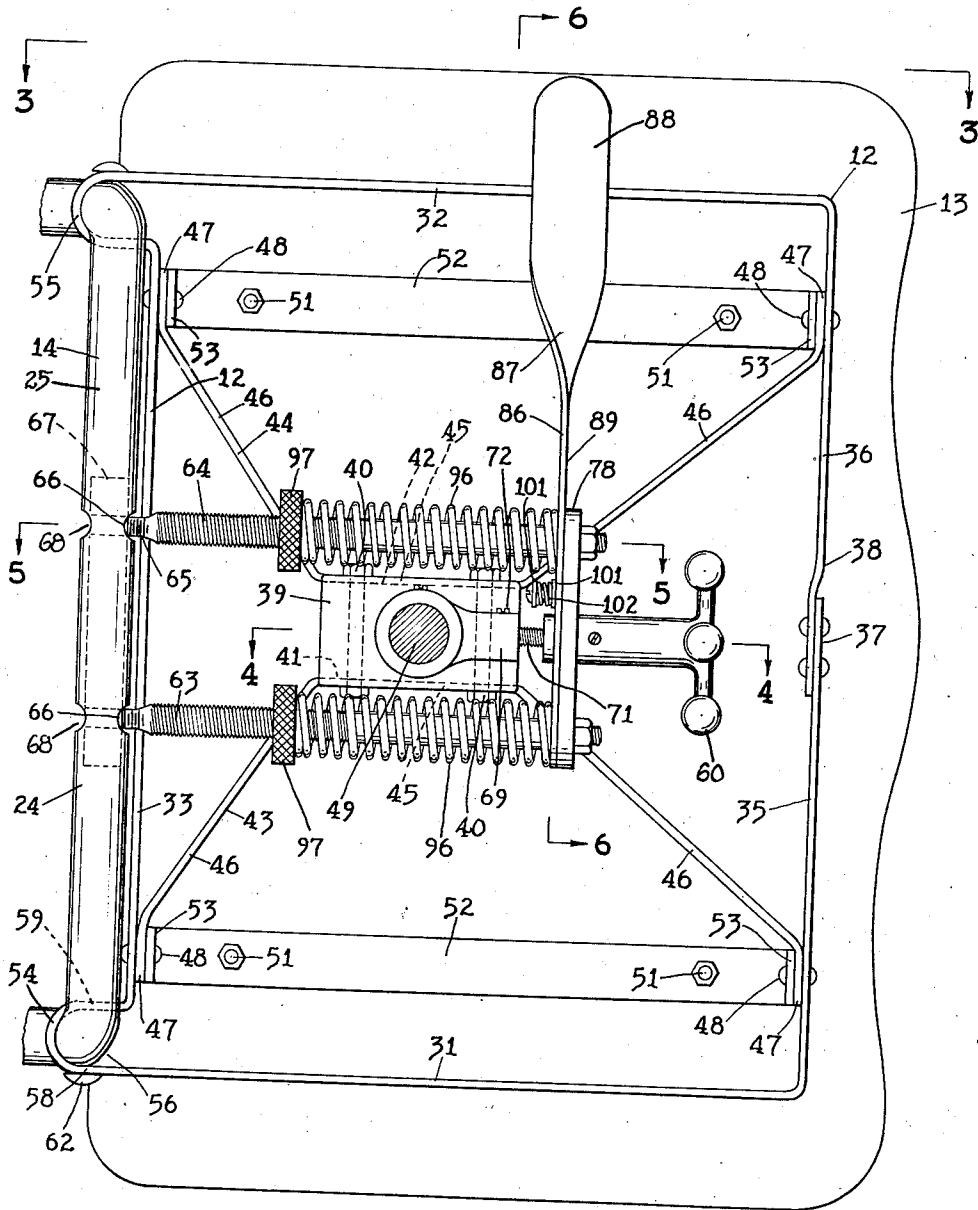


Fig. 2

Inventor

Frank L. Jungbauer

By *Carwell & Lagaard*

Attorneys

July 23, 1940.

F. L. JUNGBAUER

2,208,561

CHAIR

Filed June 13, 1938

3 Sheets-Sheet 3

Fig. 5

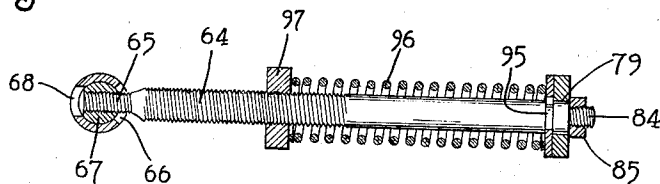


Fig. 6

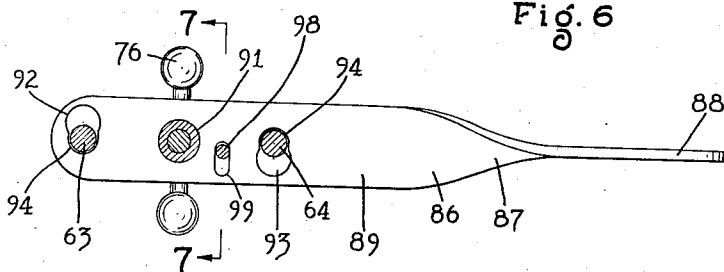


Fig. 4

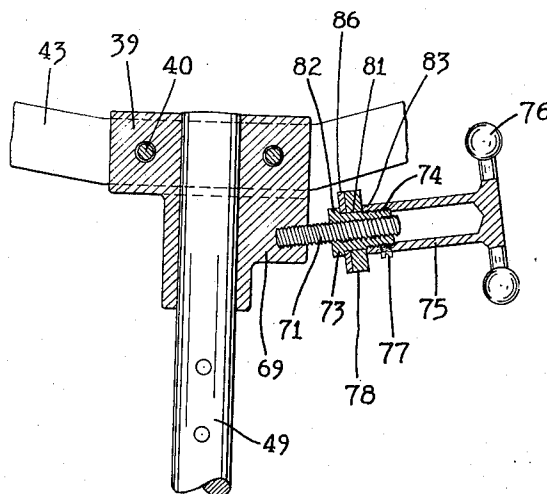
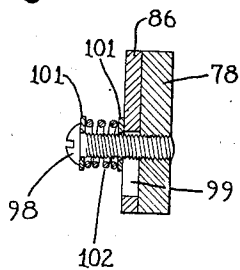


Fig. 7



Inventor

Frank L. Jungbauer

By *Carroll & Lagaard*
Attorneys

UNITED STATES PATENT OFFICE

2,208,561

CHAIR

Frank L. Jungbauer, St. Paul, Minn., assignor to
A. E. Fritz, St. Paul, Minn.

Application June 13, 1938, Serial No. 213,413

10 Claims. (Cl. 155—161)

My invention relates to chairs and particularly to chairs having a back rest, and has for an object to provide a construction by means of which the back rest may be easily and quickly adjusted in a back and forth direction.

Another object of the invention resides in providing a chair in which the back rest may be adjusted while the operator is seated on the chair.

A still further object of the invention resides in providing a chair in which the back rest becomes automatically locked in adjusted position.

A feature of the invention resides in providing a construction by means of which the back rest may be yieldingly held in adjusted position.

A still further object of the invention resides in providing a chair in which the back rest may be locked in adjusted position.

An object of the invention resides in providing a construction whereby the back rest may be either yieldingly or rigidly supported.

An object of the invention resides in providing a spindle having a spring thereon for yieldingly resisting rearward movement of the back rest and in further providing a locking device for locking movement of the spindle whereby the spring is rendered inoperable.

In the drawings:

Fig. 1 is a perspective view of a chair illustrating an embodiment of my invention.

Fig. 2 is an inverted sectional view taken on line 2—2 of Fig. 1 and drawn to a larger scale.

Fig. 3 is a fragmentary elevational view taken on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary elevational sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 4 taken on line 5—5 of Fig. 2.

Fig. 6 is a fragmentary sectional elevational view taken on line 6—6 of Fig. 2.

Fig. 7 is a cross sectional view taken on line 7—7 of Fig. 6.

In the use of the so-called posture chairs it is important that the back rest be rigidly positioned at a proper position to support the back of the user, which position must be readily adjustable and preferably while the user is seated on the chair. With such chairs it frequently becomes desirable to permit the user to lean back in the chair and to provide resilient means for resisting such movement of the back rest. The present invention provides a construction by means of which the back rest may either be locked in rigid position or may be permitted to yieldingly swing rearwardly at the option of the user.

For the purpose of illustrating the application

of my invention, I have shown in the drawings a chair adapted to be used as a stenographer's chair and which is indicated in its entirety by the reference numeral 10. The chair consists of a base 11, a seat frame 12, and a seat 13 mounted thereon. Extending upwardly from the seat frame 12 and connected to it at the rearward portion thereof is a vertical frame 14 which supports a back rest 15. The back rest 15 is adjustable in a back and forth direction and the construction by means of which this is accomplished constitutes the principal feature of this invention. The various parts of the chair 10 will now be described in detail.

The base 11 may be constructed in any desired manner. In the form of the chair shown, four tubular legs 16 are illustrated which are connected to a socketed head 17. These legs have attached to them casters 18 which rest upon the floor. The head 17 is secured by a construction to be presently described to the frame 12 which carries the seat 13.

The vertical frame 14 consists of two vertical frame members 21 and 22, a cross frame member 23 at the upper portions of the frame members 21 and 22 and cross frame member sections 24 and 25 at the lower portions of the frame members 21 and 22 forming a cross frame member 26 at the lower portion of the frame. The frame 14 is constructed from a single length of any suitable tubular material which is bent to form the various members referred to. The frame sections 24 and 25 are secured together by brazing or otherwise. The vertical frame members 21 and 22 are constructed with reverse bends 36 near their upper ends which form off-sets 37 and 38, in the said frame members 21 and 22, which are disposed inwardly of the major portions of the same frame members.

The back rest 15 may be constructed in any suitable manner and has attached to it two brackets 27 which are pivotally connected to suitable supports carried by the vertical frame members 21 and 22 of frame 14 and which are attached to said frame at the off-sets 37 and 38.

The frame 12 is best shown in Fig. 2, and is constructed from a single bar of metal which is bent to provide two longitudinally extending frame members 31 and 32, a rearwardly extending cross frame member 33 and two forwardly extending cross frame member sections 35 and 36 which are joined together at 37 to form a single front cross frame member 38. At the center of the frame is provided a block 39 which is formed with two grooves 41 and 42 on opposite sides

thereof. Two brackets 43 and 44 are attached to the block 39 and have parallel portions 45 which are received within the grooves 41 and 42. Attachment of these brackets to the block 39 is accomplished by means of two bolts 40 which extend jointly through the block 39 and through the parallel portions 45 of the brackets 43 and 44. These brackets have diagonally extending legs 46 which terminate in ears 47 attached to the cross frame members 33 and 38, by means of rivets 48. The block 39 has secured to it a vertically extending standard 49 which is rotatably mounted in the socketed head 17. By means of this construction, a swivel is provided whereby the seat 10 may rotate with reference to the base 11. If desired, an adjustment may be provided whereby the standard 49 may be held in vertically adjusted position with respect to the base 11 to accommodate the height of the user. The seat 13 has attached to the underside thereof, by means of bolts or screws 51, two longitudinally extending supporting bars 52. These bars have downturned ears 53 formed thereon which overlie the ears 47 of brackets 43 and 44 and which are attached to the frame 12 by means of the rivets 48, previously referred to. By means of this construction the seat 13 is rigidly attached to the frame 12.

The vertically extending frame 14 is pivotally mounted on the frame 12 in the following manner. At the joinder of the cross frame member 33 and the longitudinal frame members 31 and 32 are formed two loops 54 and 55. These loops are constructed with spaced portions 58 and 59 which provide spaces 56 therebetween. The vertical frame members 21 and 22 are arranged within said spaces and are pivoted to the frame 12 by means of rivets 62 which pass through the portions 58 and 59 of the loops 54 and 55 and through the said upright frame members. These rivets are so positioned that the lowermost cross frame member 20 is positioned somewhat below the frame 12, as shown in Fig. 3.

The supporting device for the back rest 15 utilizes two threaded rods 63 and 64 which are constructed with reduced shanks 65 at the rearward ends of the same. These rods extend through openings 66 in the lower frame member 20 of frame 14 and are threaded into a short rod 67 disposed within the frame member 20. The ends of the shanks 65 may be riveted over through openings 68 formed in the portions of the frame member 20 opposite the openings 66 as will become evident from Fig. 5. The openings 66 are sufficiently large so that the rods 63 and 64 may rock relative to the frame member 20 to accommodate relative movement between said rods and the frame 14 when the back rest is operated.

Adjustment of the back rest frame 14 is had through an adjusting mechanism 60. Formed on the underside of the block 39 is a boss 69 which is threaded to receive a threaded stud 71 projecting outwardly therefrom. This stud is held in fixed position within the boss 69 by means of a set screw 72. A threaded nut 73 (Fig. 4) is adapted to screw upon the stud 71. This nut is itself threaded upon the exterior, as designated at 74 and screws into the tubular shank 75 of a handle 76. The nut 73 is held in position with reference to the tubular shank 75 by means of a set screw 77.

Extending across the two rods 63 and 64 is a cross bar 78 which serves as the adjusting member of the adjusting mechanism. This cross bar

is formed with two holes 79 which receive the ends of the rods 63 and 64 and with a central hole 81 through which the nut 73 projects. Nut 73 is constructed with a shouldered head 82 and the end 83 of the shank 75 forms another abutment by means of which the cross bar 78 may be moved forwardly and rearwardly as the handle 75 is rotated and the nut 73 screwed upon the stud 71.

The ends of the rods 63 and 64 are reduced in diameter and threaded as indicated at 84 in Fig. 5. Upon these threaded ends are screwed nuts 85 which abut against the shoulders formed between said reduced portions and the rods proper and which form abutments against which the cross bar 78 may abut and whereby the back rest may be positively moved rearwardly when the handle 75 is rotated in a counter-clockwise direction.

Operating in conjunction with the cross bar 78 is a lever 86 formed from bar material which is twisted at 87 intermediate its ends to form a body portion 89 and a finger piece 88 connected therewith. The body 89 of the lever 86 is constructed with an opening 91 similar to the opening 81 of cross bar 78 which also receives the nut 73. The body 89 of the lever 86 lies adjacent the cross bar 78 and the head 82 of the nut 73 engages said lever and holds the lever in juxtaposition with respect to said cross bar. By means of the said shoulder and lever the cross bar 78 may be moved forwardly through the shoulder 82, and by means of shoulder 83 said cross bar which is directly in contact therewith may be moved rearwardly.

Encircling the two rods 63 and 64 are compression coil springs 96. These coil springs are seated against the body portion 89 of lever 86 and against adjusting nuts 97 screwed upon the threaded ends of said rods. By means of these nuts the flexure of the springs 96 may be adjusted so that any desired degree of pressure may be exerted to force the back rest rearwardly.

The body 89 of lever 86 is formed with two openings 92 and 93 which have reduced portions 94 eccentrically arranged with reference thereto as best shown in Fig. 6. The openings 92 and 93 are of sufficient size to receive the rods 63 and 64 which may slide freely through the same. In the rods 63 and 64 and in proximity to the lever 86 are formed annular grooves 95 which have an internal diameter substantially equal to the diameter of the reduced portion 94 of the openings 92 and 93. When the lever 86 is oscillated about the nut 73 as a pivot, the portions of the body 89 of said lever adjacent the reduced portions 94 of the openings 92 and 93 may be brought into engagement with grooves 95. This locks the cross bar 78 from movement with reference to the rods 63 and 64 and prevents movement of the back rest excepting through manipulation of the nut 73.

The operation of the invention is as follows: When the lever 86 is depressed by means of the finger piece 88, the portion of the said lever adjacent the reduced portions 94 of openings 92 and 93 are forced into the grooves 95 of the rods 63 and 64. Due to the fact that the lever 86 is held from movement in the direction of the axis of the rods 63 and 64 by means of shoulder 82 of nut 73 this procedure serves to lock the rods from movement with reference to the cross bar 78 and the nut 73 and handle 75. The back rest 15 thus becomes rigidly positioned. The position of the back rest may be determined by rotating

the handle 76 and moving the nut 73 along the stud 71. When it becomes desirable to use the chair with the springs so that the back rest may be yieldingly moved rearwardly, the finger piece 5 88 of lever 86 is elevated and the openings 92 and 93 are caused to register with the rods 63 and 64. Inasmuch as these openings are concentric with said rods, the rods may slide without obstruction and rearward pressure on the back rest 15 will 10 force the said rods forwardly, said movement being resisted by the springs 96.

To limit movement of the lever 86 to the position in which the openings 92 and 93 are concentric with the rods 63 and 64 a stop is employed 15 which is best shown in Fig. 6. This stop includes a screw 98 which extends through a slot 99 in the body 89 of lever 86 and is threaded into the cross bar 78. This screw extends for some distance outwardly beyond the lever 86 and is 20 provided with two washers 101 mounted on the same. Between these washers is disposed a compression coil spring 102 which causes one washer to bear against the body 89 of lever 86 and causes sufficient friction between the said lever and the 25 cross bar 78 so that the said lever is frictionally held in either of its adjusted positions. Springs 96 also assist in holding the lever in adjusted position. The slot 99 is so constructed that upon 30 the screw 98 engaging the body 89 at the ends of said slot the movement of the lever is terminated at its two proper extreme positions.

The advantages of my invention are manifest. An extremely practical construction is provided by means of which the user of the chair may 35 easily convert the chair into a lean back chair or a chair having a rigid back rest. Adjustment of the position of the back rest can be had while the user is seated on the chair and likewise conversion of the chair may be had while the user is 40 seated. By means of the friction member used in conjunction with the invention, the parts are positively held in adjusted position. My invention may be constructed at a nominal expense. The device will not readily get out of order and is 45 subjected to a minimum amount of wear.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

50 Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a chair, a seat frame, a pivoted back rest frame extending upwardly therefrom, a rod pivotally connected to the back rest frame and extending in juxtaposition with respect to the seat 55 frame, a spring encircling said rod and seated at one end against a part carried by said rod and seated at its other end against an adjusting member carried by said seat frame, said rod being normally movable in a back and forth direction relative to said member to accommodate flexing of said spring stop means on said rod engaging said 60 member to limit the rearward movement of the rod, means for locking said rod from movement with respect to said member in a direction tending to flex said spring, and means for moving said adjusting member relative to the seat frame in the direction of said rod to adjust the position 65 of said back rest.

2. In a chair, a seat frame, a back rest frame 70 extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, an elongated member 75 pivoted to said portion of the back rest frame and

extending below the seat frame, an adjusting member adjustably attached to said seat frame and movable relative to the seat frame in the direction of extent of said elongated member, said elongated member being movable relative to said 5 adjusting member and in a back and forth direction, resilient means acting between said elongated member and said adjusting member and resisting rearward movement of the back rest frame stop means on said elongated member engaging 10 said adjusting member to limit the rearward movement of the elongated member, and means for locking said elongated member and adjusting member from relative movement in a direction tending to flex said resilient means. 15

3. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending 20 below said pivot means, a rod pivoted to said portion of the back rest frame and extending below the seat frame said rod being movable in a back and forth direction, an adjusting member movably connected to the seat frame for movement relative to the seat frame in the direction of extent 25 of the rod, said rod extending in proximity to said adjusting member, resilient means acting between said rod and said adjusting member stop means on said rod engaging said member to limit the rearward movement of the rod and 30 means for locking said rod from movement with respect to said adjusting member in a direction tending to flex said resilient means.

4. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for 35 pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, a threaded rod pivoted to said portion of the back rest frame and movable in a back and forth direction, a nut screwed on 40 said rod, an adjusting member movably connected to said seat frame for movement in the direction of extent of said rod, said adjusting member having an opening therein through which the rod extends, a spring encircling said rod, said nut 45 forming an abutment for resisting movement of said spring in one direction and said adjusting member forming an abutment for resisting movement of said spring in the other direction, stop 50 means on said rod engaging said member to limit the rearward movement of the rod, and means for locking said rod from movement relative to said adjusting member in a direction tending to flex said spring.

5. In a chair, a seat frame, a back rest frame 55 extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, a threaded rod pivoted to said portion of the back rest frame and being 60 formed with a shoulder said rod being movable in a back and forth direction, a nut screwed on said rod, an adjusting member movably connected to said seat frame for movement in the direction of extent of said rod, said adjusting member having 65 an opening therein through which the rod extends, a spring encircling said rod, said nut forming an abutment for resisting movement of said spring in one direction and said adjusting member forming an abutment for resisting movement 70 of said spring in the other direction, said spring resisting rearward movement of the back rest frame, stop means on said rod engaging said member to limit the rearward movement of the rod, and locking means movable transversely with 75

respect to the direction of extent of said rod and engaging said shoulder for preventing relative movement between said rod and adjusting member in a direction tending to flex said spring.

6. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, two parallel rods pivoted to said portion of the back rest frame and extending below said seat frame said rods being movable in a back and forth direction, a cross bar having openings therein through which both of said rods extend, means connected to said seat frame and cross bar for moving said cross bar in the direction of extent of said rods, resilient means acting between said rods and cross bar, stop means on said rods engaging said cross bar to limit rearward movement of the rods, and locking means for simultaneously locking both of said rods from movement with respect to said cross bar in a direction tending to flex said springs.

7. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, two parallel rods pivoted to said portion of the back rest frame and extending below said seat frame said rods being movable in a back and forth direction, a cross bar having openings therein through which both of said rods extend, means connected to said seat frame and cross bar for moving said cross bar in the direction of extent of said rods, resilient means acting between said rods and cross bar, stop means on said rods engaging said cross bar to limit rearward movement of the rods, a lever pivoted to said cross bar at a locality intermediate said rods, said rods having grooves therein and means on said lever for simultaneously engaging said grooves to lock the cross bar from movement relative to said rods.

8. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, two parallel rods pivoted to said portion of the back rest frame and extending below said seat frame, said rods being movable in a back and forth direction, a cross bar having openings through which both of said rods extend, stop means on said rods engaging said cross bar to limit rearward movement of the rods, threaded means carrying said cross bar and restrained from axial movement with respect thereto, a threaded member attached to said seat frame and engaging said threaded means, said threaded means upon rotation moving said cross bar in the direction of extent of said rods and a lever pivoted to said cross bar with its axis at the axis of said threaded means and member, and means on said lever for engaging said rods and

locking said rods from movement relative to said cross bar.

9. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, two parallel rods pivoted to said portion of the back rest frame and extending below said seat frame said rods being movable in a back and forth direction, a cross bar having openings through which both of said rods extend, stop means on said rods engaging said cross bar to limit rearward movement of the rods, threaded means carrying said cross bar and restrained from axial movement with respect thereto, a threaded member attached to said seat frame and engaging said threaded means, said threaded means upon rotation moving said cross bar in the direction of extent of said rods, a lever pivoted to said cross bar with its axis at the axis of said threaded means and member, said rods having circumferentially extending grooves therein disposed in proximity to said lever, said lever having openings therein through which said rods may freely slide, the marginal portions of said lever at the openings being adapted to be simultaneously moved into said grooves when the lever is moved into one position to lock the rods from movement relative to the cross bar and springs acting between said lever and rods for resisting rearward movement of the back rest frame when the lever is out of engagement with said grooves.

10. In a chair, a seat frame, a back rest frame extending upwardly therefrom, pivot means for pivoting said back rest frame to said seat frame, said back rest frame having a portion extending below said pivot means, two parallel rods pivoted to said portion of the back rest frame and extending below said seat frame, said rods being movable in a back and forth direction, a cross bar having openings through which both of said rods extend, stop means on said rods engaging said cross bar to limit rearward movement of the rods, threaded means carrying said cross bar and restrained from axial movement with respect thereto, a threaded member attached to said seat frame and engaging said threaded means, said threaded means upon rotation moving said cross bar in the direction of extent of said rods, a lever pivoted to said cross bar with its axis at the axis of said threaded means and member, said rods having circumferentially extending grooves therein disposed in proximity to said lever, said lever having openings therein through which said rods may freely slide, the marginal portions of said lever at the openings being adapted to be simultaneously moved into said grooves when the lever is moved in to one position to lock the rods from movement relative to the cross bar, nuts threaded on said rods and springs acting between said lever and nuts for resisting rearward movement of the back rest frame when the lever is out of engagement with said grooves.

FRANK L. JUNGBAUER.